

NOTES ON VARIETIES OF *BIDENS CONNATA*
AND A HYBRID WITH *B. CERNUA*

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Some years ago I cited (*Brittonia* 11:190. 1959) *Bidens connata* var. *gracilipes* Fern. as growing on the east shore of Eagle Lake, Kalamazoo County, Michigan. Later, I listed various additional localities for the same variety (*Bidens connata* var. *gracilipes* Fern. in Western Michigan, *Rhodora* 63:145. 1961). Still later (*ibid.* 64:23-28. 1962), under the caption, "Further notes on the distribution of *Bidens connata* vars. *pinnata* and *gracilipes*," I discussed the two varieties, giving an extended list of *exsiccatae* of var. *pinnata* for Wisconsin (pp. 24 & 25), also a list of additional ones of var. *gracilipes* for Western Michigan (pp. 27 & 28) and Wisconsin (p. 26).

Recently, through the kindness of Dr. Gerald B. Ownbey, Professor of Botany and Curator of the Herbarium at the University of Minnesota, I was permitted to examine the entire collection of Minnesota specimens of *Bidens* in that herbarium. A careful search was made for the possible occurrence of var. *gracilipes* in Minnesota. Only five collections of the variety were found, all from the north or eastern part of the state: *Olga Lakela* 1860, ("leaves on mainstem divided" *fide* *Lakela*), Oatka Beach Addition, Bay Front, Duluth, Minnesota, Sept. 15, 1936 (MIN); *Lakela* 6202, St. Louis River estuary at New Duluth, Minn., Sept. 9, 1945 (MIN); *Lakela* 19270, shore swamp of Black Bay of Rainy Lake, Koochiching County, Minn., Aug. 16, 1955 (MIN); *Carl O. Rosendahl* 6503, shores of Deming Lake, Itasca Park, Minn., Sept. 8, 1933 (MIN); *J. H. Sandberg*, wet places, Hennepin County, Minn., August, 1889 (MIN).

So far as known at present, *Bidens connata* var. *pinnata* is found growing only in Minnesota and Wisconsin, as previously stated by me (*N. Amer. Fl. ser. II: pt. 2: 91. 1955*). To the list of *exsiccatae* of *Bidens connata* var. *pinnata* cited for Wisconsin, may be added the following found in the Herbarium of the University of Minnesota: all from localities in Minnesota:

F. K. Butters & C. O. Rosendahl 6555, annual, shores of island, Form Island Lake, Aitkin County, Minn., Sept. 6, 1934; *C. L. Herrick*, Minneapolis, Minn., July, 1878; *Olga Lakela 1858*, in shallow water on bog shore, Oatka Beach Addition, Duluth, Minn., Sept. 7, 1936 ("leaves pinnate on the main stem"); *Lakela 4869*, roadside swamp south of Cloquet, Carlton County, Minn., Sept. 5, 1941; *Lakela 5905*, in shallow pond on Minnesota Point, Duluth, Minn., Sept. 10, 1944; *Lakela 6231*, swamp along St. Louis River at New Duluth, Minn., Sept. 15, 1945 (2 sheets examined); *Bruce R. Ledin*, edge of Hill Point Bog across from Schoolcraft Island, Itasca Park, Minn., Aug. 25, 1938; *John W. Moore 24920*, growing along the north shore of Loon Lake, Blue Earth County, Minn., Sept. 30, 1959; *C. O. Rosendahl 6134*, in dried-up pond near Pine Tree Lake, Washington County, Minn., Sept. 17, 1929.

During the examination of Minnesota specimens of *Bidens connata* and its known varieties, however, two additional sheets of material were discovered, one of them bearing an obviously new variety of *B. connata* and the other bearing what I construed to be a hitherto undescribed hybrid. The new variety is set forth here:

Bidens connata var. **saint-vincentii** var. nov. — Herba annua ± 4 dm. alta, glabra, pallida, suberecte ramosa, ramis tenuibus angulatis striatisque tantum circ. 1 mm. crassis. Folia principalia (pro unica planta visa) tripartita, petiolata petiolo tenui 2.5-3 cm. longo, foliolis membranaceis ovatis ovato-lanceolatisve apice acutis basi plus minusve petiolulatis marginibus subintegris saepius acriter paucidentatis lateralibus 1-2.5 cm. longis terminali (petiolulo excluso) 1.5-4.5 cm. longo; alia folia saepius simplicia, minora, interdum integra. Involucri bracteae exteriores 4-8, lineari-spathulatae, adscendentes, usque ad circ. 3.5 cm. longae et 5 mm. latae, apice acutae, marginibus pauciter antrorso-spinulosae alibi glaberrimae. Achaenia biaristata, corpore atra vel subatra, 7-11.5 mm. longa et 1.5-3.5 mm. lata, plana vel valde obcompressa, anguste lineari-cuneata, faciebus striata et remote subremoteve erecte adpresseque setulosa, marginibus de apice usque ad basim erecte setosa; aristis circ. 2.5-4 mm. longis suberectis, acriter retrorso-hamosis.

Annual herb ± 4 dm. tall, glabrous, pale-green, suberectly branched, the branches delicate, angulate and striate, only about 1 mm. thick. Principal leaves (seen only for a single plant) tripartite, petioled with a slender petiole 2.5-3 cm. long; the leaflets membranaceous, ovate or ovate-lanceolate, apically acute, at base more or less petiolulate, the margins subentire more often sharply few-dentate, lateral ones 1-2.5 cm. long, terminal one (petiolule excluded) 1.5-4.5 cm. long; secondary leaves more often simple, smaller, at times entire. Outer involucral bracts (phyllaries) 4-8, linear-spatulate, ascending,

up to about 3.5 cm. long and 5 mm. wide, apically acute, at margins scantily antrorse-spinulose elsewhere very glabrous. Achenes biaristate, their body black or blackish, 7-11.5 mm. long and 1.5-3.5 mm. wide, flat or strongly obcompressed, narrowly linear-cuneate, on the faces striate and remotely or subremotely erectly and appressedly setulose, edges erectly setose all the way from apex to base; aristae about 2.5-4 mm. long, suberect, sharply and retrorsely barbed.

Holotype: *John W. Moore & John H. McAndrews 24810*, growing on the river bank at St. Vincent, Kittson County, northwesternmost Minnesota, Sept. 17, 1959 (MIN., herb. no. 574691).

The general habit of the foliage and fruiting heads, also the striate achenial surfaces, place this plant with the *Bidens connata* Muhl. complex. Indeed, the collectors had determined the type as "*Bidens connata* Muhl."

In my previously published key to the varieties of *Bidens connata* (North Amer. Flora ser. II: pt 2: 89. 1955), var. *saint-vincentii* will deserve a special line as a fourth line of the key, to read: Achenial aristae normally 2
..... var. *saint-vincentii*.

The type, a moderately small specimen, doubtless selected in the field for ease of preserving, probably is somewhat atypic as to foliage characters of large, well developed plants. More specimens should be studied in the type locality.

In the entire species, *Bidens connata*, consisting as it does of eight hitherto-known varieties (including the var. *connata*), no achenes have been known to be as here, constantly biaristate. The usual number of aristae is four, though in var. *submutica* Fassett they may be "none or rarely one or two."

The above-mentioned undescribed hybrid may be set forth as:

A putative hybrid of *Bidens cernua* L. and *B. connata* Muhl.

Under her no. 2356, Miss Olga Lakela distributed as *Bidens cernua* L. a remarkably slender-leaved annual herb which she had collected at Duluth, Minnesota: *Lakela 2356*, in shallow water on Oatka Beach Addition, Duluth, Minnesota, "leaves very narrow, bracts long," Sept. 6, 1937 (MIN). The plant examined by me is on herbarium sheet no. 338394. It is of slender, erect habit with slender sub-

erect branches; the leaves are all simple, exceedingly narrow (even graminiform) and 4-12 cm. long by 1.5-7 mm. wide, very long-attenuate at both ends, the tip very acute, surfaces glabrate, margins entire or each $\pm 2-5$ -dentulate with slender, small and at times inflexed teeth, otherwise glabrate except for almost microscopic *spinulae*. The heads are radiate, about 2.5-3 cm. wide when expanded at anthesis, the disk (excluding the outer phyllaries) about 1.5 cm. wide; ray florets about 1.2-1.4 cm. long, ray yellow, linear-oblong and about 3-4 mm. wide. Outer phyllaries about 8, linear or linear-spatulate, ± 1.5 cm. long, about 3- or 5-striate, glabrous except for minutely spinulose edges.

The achenes are of the type found on *Bidens cernua* but are grossly undeveloped, almost abortive, seemingly suggestive of hybridity. As the general aspect of the plant is unlike that of any *Bidens cernua* material ever heretofore seen by me, and as specimens of *B. connata* var. *pinnata* Wats. and *B. connata* var. *gracilipes* Fern. were collected by the same collector in the same small locality just a year earlier (*vide Lakela 1858 and 1860, supra*), I have concluded *Lakela 2356* to be designated best as a putative hybrid between *B. cernua* L. and some variety, perhaps var. *gracilipes* Fern. or var. *pinnata* Wats., of *B. connata* Muhl. Years ago I wrote (The Genus *Bidens*. Bot. Ser. Field Mus. Nat. Hist. 16: 262, footnote 1. 1937): *Bidens connata* appears to hybridize very rarely in nature. I have seen two sheets of material (Herb. W. C. Ferguson) collected by W. C. Ferguson, Plattsdale, Long Island, New York, Sept. 20, 1919, which appeared clearly to be of hybrid origin — *B. connata* \times *B. cernua*. The leaves were tripartite as in typical *B. connata*; the heads were radiate and much like those of *B. cernua*.

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